

Armed Forces College of Medicine

AFCM

Soft tissue tumors



- They include mesenchymal tumors **other than bone and cartilage.**
- Ccurrent evidence indicates that these tumors arise from ***pluripotent mesenchymal cells*** and not mature mesenchymal cells.
- **Benign soft tissue tumors are much more common.**

Tumors of adipose tissue	1. Lipoma.	2. Liposarcoma
Tumors of fibrous tissue	1. Fibroma	2. Fibrosarcoma
Tumors of smooth muscles	1.Leiomyoma	2. Leiomyosarcoma
Vascular tumors	1. Hemangioma 3. Hemangioendothelioma 4.angiosarcoma	2. Lymphangioma

Lipoma

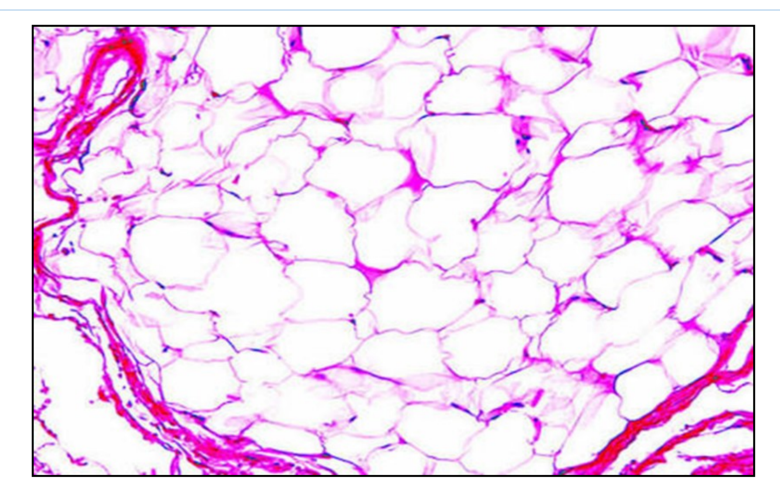


Lipoma: **is the most common soft tissue tumor.**
It is a slowly growing **benign** tumor of adipose tissue that arise from **subcutaneous fat**, intermuscular septae, breast, omentum, GIT….. .

Gross picture: **well defined capsulated mass with yellowish soft lobulated greasy cut surface.**

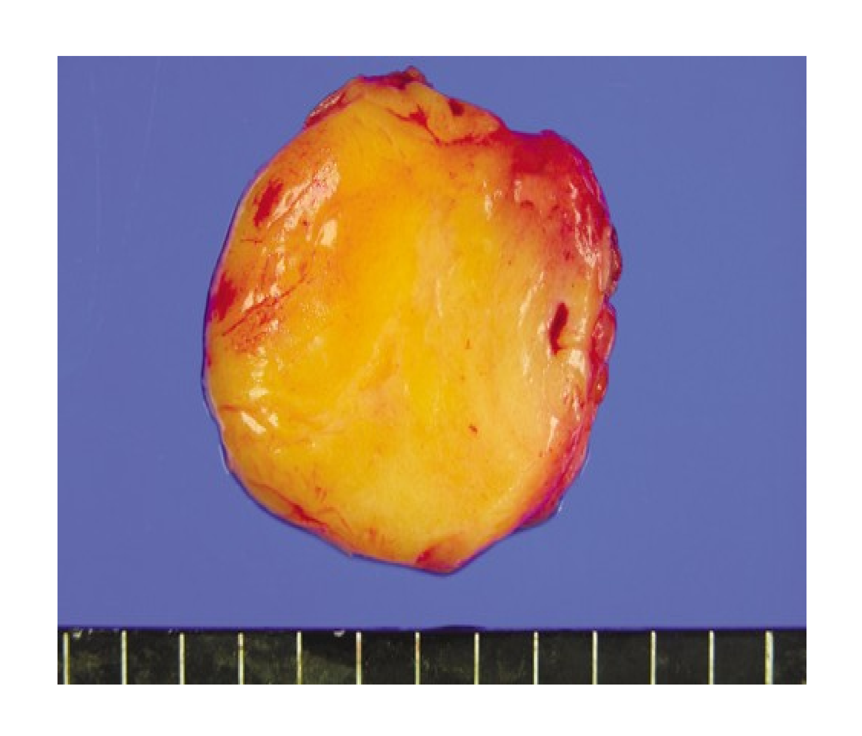
Microscopic picture: **capsulated with delicate vascularized fibrous septae dividing the tumor into lobules formed of mature fat cells.**

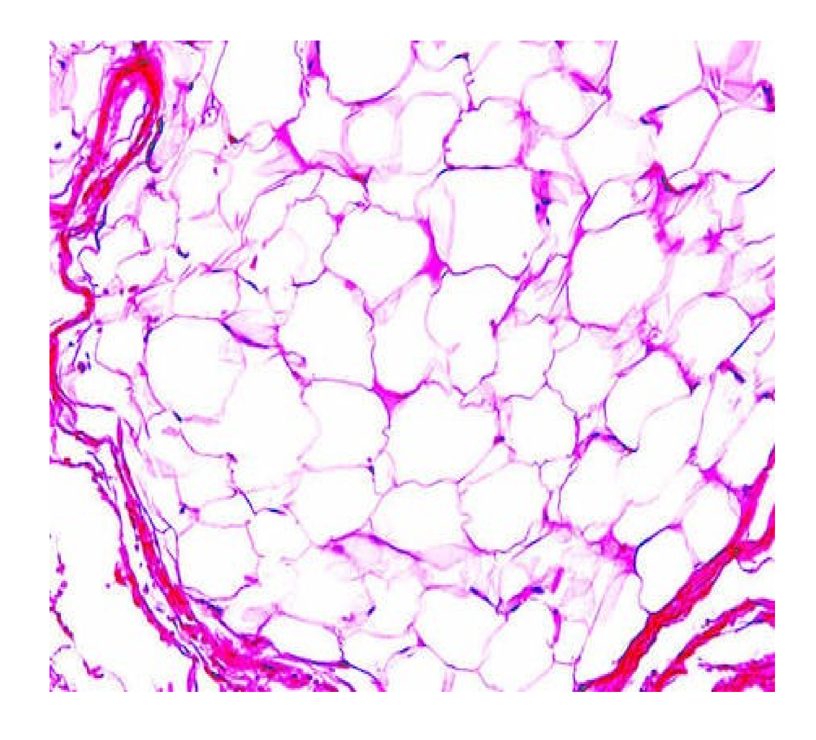




Lipoma





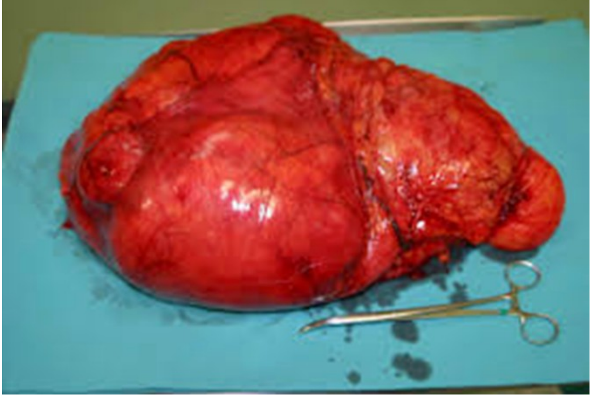


Liposarcoma

- **Liposarcoma:** malignant tumor of adipose tissue.
- They occur in the **fifth to sixth decade.**
- They arise commonly in the **retroperitoneum** as relatively :
  - **large** well circumscribed masses, **non-capsulated** with glistening yellowish cut surface.







Liposarcoma



Mesenchymal cell

Fibroblast

Lipoblast

Lipoblast

Multilocular adipocyte

Unilocular adipocyte

A

Source: Howard M. Reisner: Pathology: A Modern Case Study
www.accessmedicine.com

Lipoblasts

Liposarcoma



Typical lipoblast

Lipoblasts

- Primitive cells indicative of fatty differentiation /**univacuolated and multivacuolated**
- Indented atypical nucleus recapitulating fetal fat cells.

Tumors of adipose tissue



Lipoma



Liposarcoma



Tumors of smooth muscle



1. **Leiomyoma: Benign** smooth muscle tumors.

   They are common in the **uterus**, and **gastrointestinal tract.**

2. **Leiomyosarcoma:** rare **malignant** smooth muscle tumors.

   Can occur in the uterus, and stomach. Present grossly by a **large bulky fleshy mass** with wide areas of hemorrhage and **necrosis**.

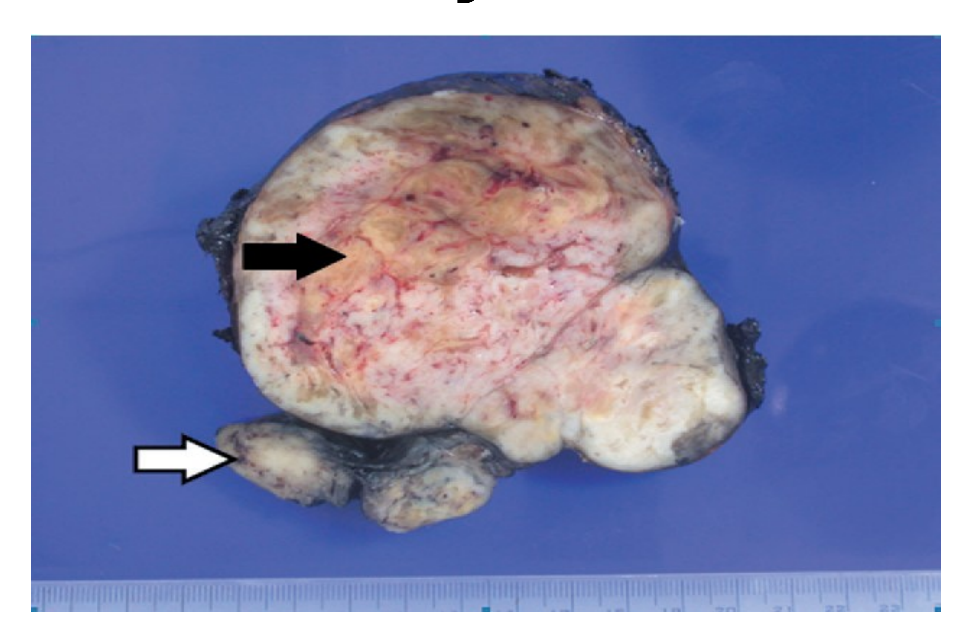
Tumors of smooth muscle



Leiomyoma



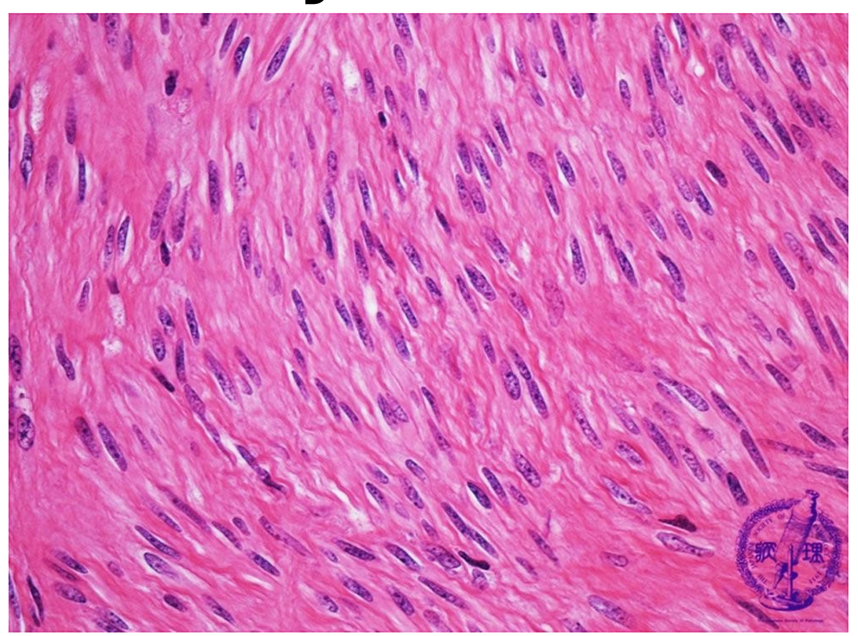
Leiomyosarcoma



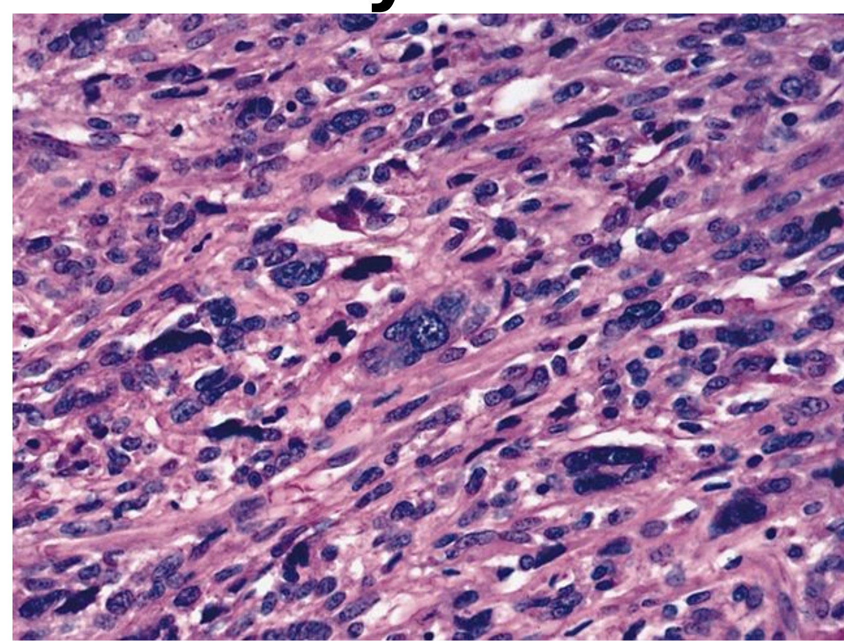
Tumors of smooth muscle



Leiomyoma



Leiomyosarcoma



<u>Benign vascular tumors</u>



1- Hemangioma: Benign vascular tumor formed of vascular spaces filled with blood commonly seen in infants or children.

- It has two histologic variants:
    1. Capillary hemangioma: **the commonest type**
    2. Cavernous hemangioma.
- ***<u>Gross</u>***: It is <u>well defined</u> non capsulated tumor**.**
- ***<u>Microscopic</u>***: It is formed of capillary sized or large vascular spaces lined by endothelium and separated by connective

Hemangioma



Capillary hemangioma
cavernous hemangioma





Cavernous Hemangioma



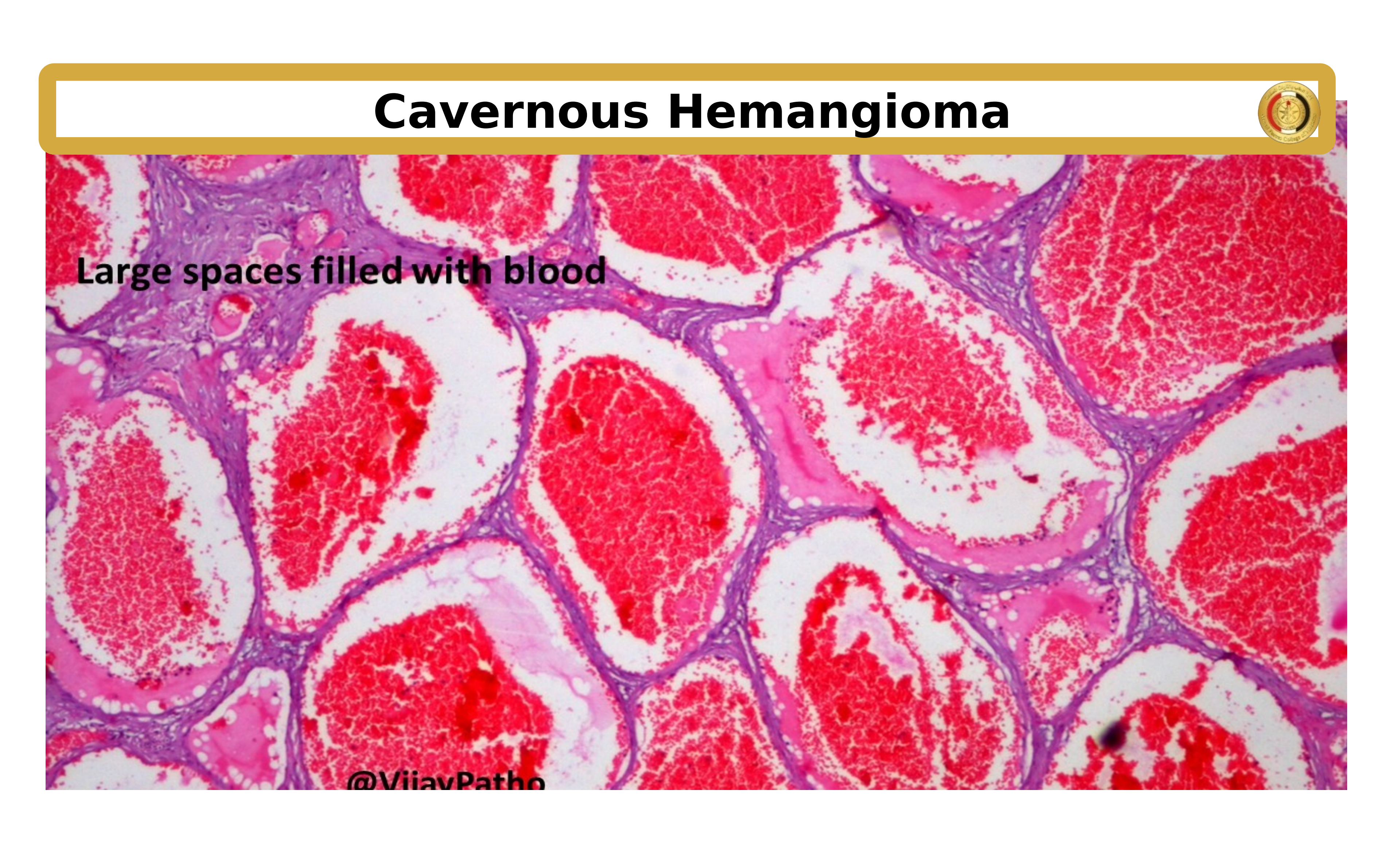




Capillary Hemangioma



Cavernous Hemangioma



Benign vascular tumors

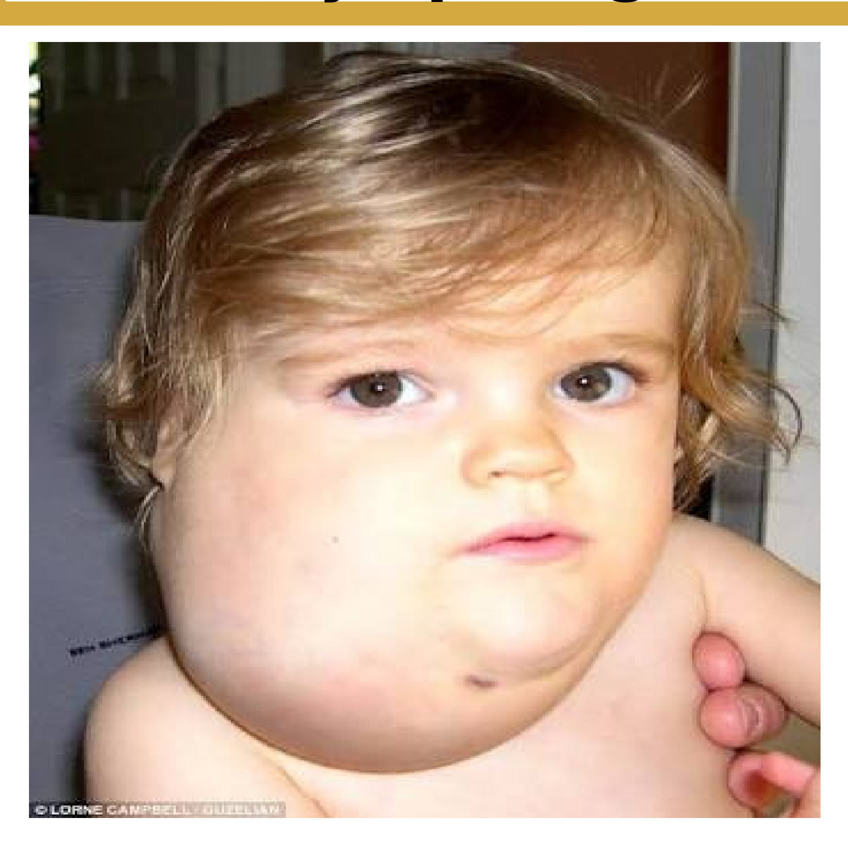


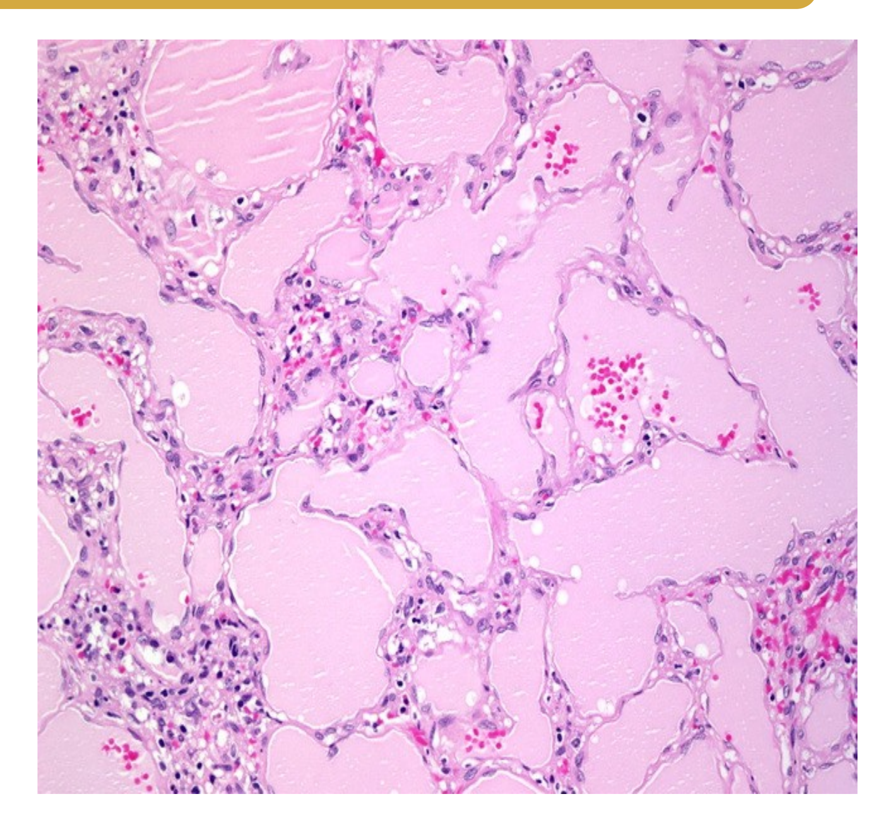
2- Lymphangioma: Benign vascular tumor formed of lymphatic vascular spaces filled with lymph (not blood) & often congenital

- It is well defined non capsulated tumor**.**
- It is formed of capillary sized or large vascular spaces lined by endothelium and separated by connective tissue stroma rich in lymphocytes.

Lymphangioma (Cystic Hygroma)









Osteomyelitis



Osteomyelitis



Definition:

Inflammation of bone & bone marrow.

I- Infection.

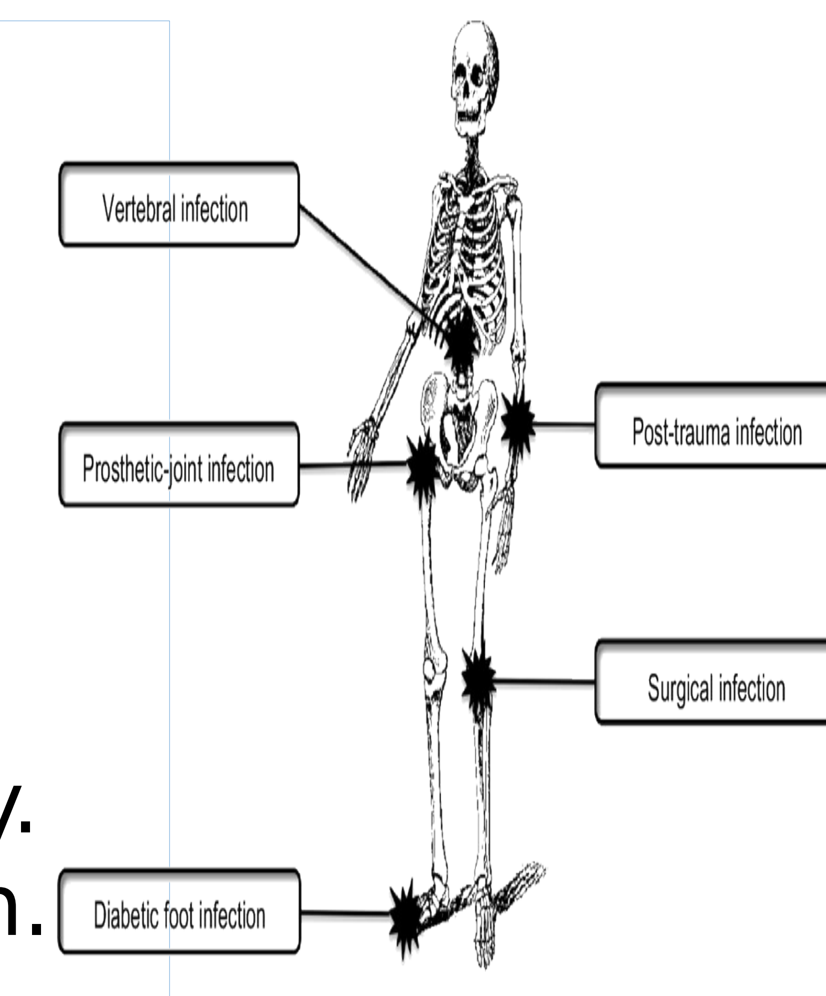
Predisposed by:

A- Trauma or surgical procedure.

B- Vascular insufficiency.

C- Bacterial colonization.

II- Non –Infection.



https://www.researchgate.net/figure/Common-osteomyelitis_fig2_49602810

Osteomyelitis



Bacterial

Acute osteomyelitis

Acute Haematogenous OM

Acute Non-Haematogenous OM

Chronic osteomyelitis

Chronic non-specific OM

Chronic specific OM (T.B)

Non-Bacterial

Viral

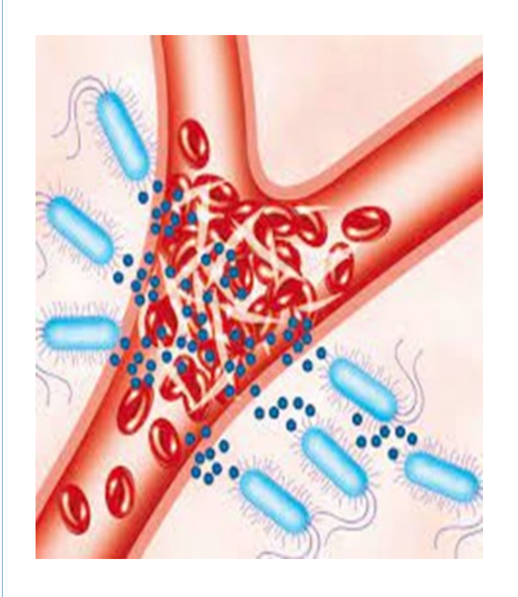
Sarcoidosis

Radiation

Acute Hematogenous Osteomyelitis



- Most common in children
- **The organisms:**
  - **Staph. aureus** in 80-90% of cases
  - Less commonly E.coli , Salmonella, Staph albus Pneumococci or Streptococci.





Acute Hematogenous Osteomyelitis



Throat
Tonsils
Teeth

Skin infection
Paronychia
Furuncle
Infected wound

Urinary tract infection

Gastrointestinal infection
Salmonella
Typhoid
Appendicitis
Peritonitis
Umbilical infection

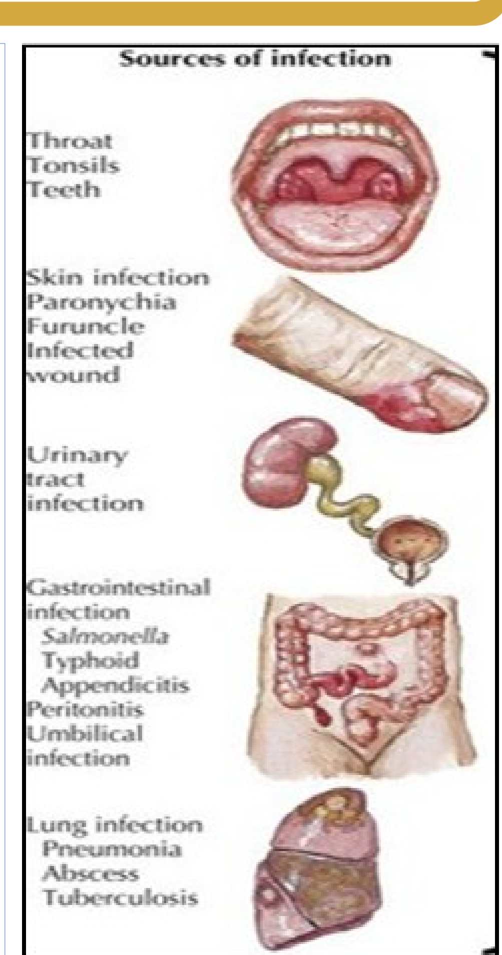
Lung infection
Pneumonia
Abscess
Tuberculosis

B

Acute Hematogenous Osteomyelitis



1. **The organisms are derived from remote infections (e.g respiratory , intestinal, urinary, oral, or skin).**
2. **They reach the blood stream <u>(bacteraemia)</u> following <u>trivial injuries</u> such as intestinal mucosal abrasions during defecation or slight oral mucosal injuries due to**



Acute Hematogenous Osteomyelitis



Pathogenesis:

The bones most commonly affected

THE LONG BONES vertebrae.

The location of the lesions within the affected long bone is influenced by the vascular circulation, which changes with age.





Acute Hematogenous Osteomyelitis



Infants < 18 mon.	children (18 mon. to 16 yrs	Adults after closure of the growth plate

epiphysis = its own bl.vs

metaph h. bl. Vs

metaph y &

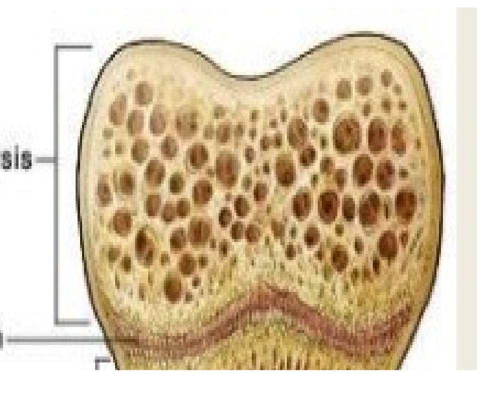
transphyseal bl.vs--->

A natural barrier is formed by the physis preventing spread of OM in the epiphysis and joints. Therefore, children **18 mon. & 16 years** will present with an

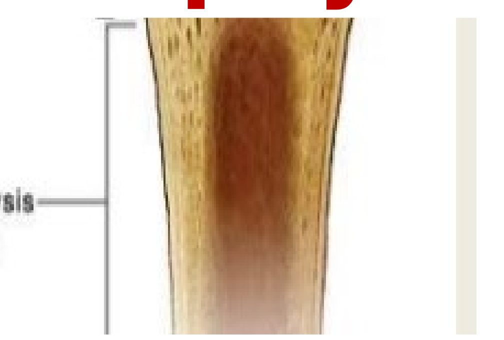
Acute Hematogenous Osteomyelitis



Childr



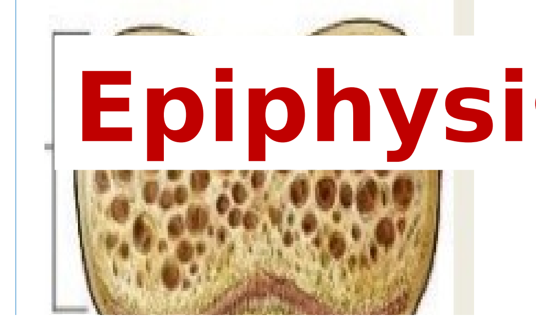
etaphysis



1. The **most vascular** part of bone
2. The **blood flow** within the metaphysis is normally **slow**
3. Metaphysis is the most **subjected part of bone to trauma** (trauma is known to be a

Adults

Epiphysi



Metaphysi



Acute Hematogenous Osteomyelitis



Clinical presentat



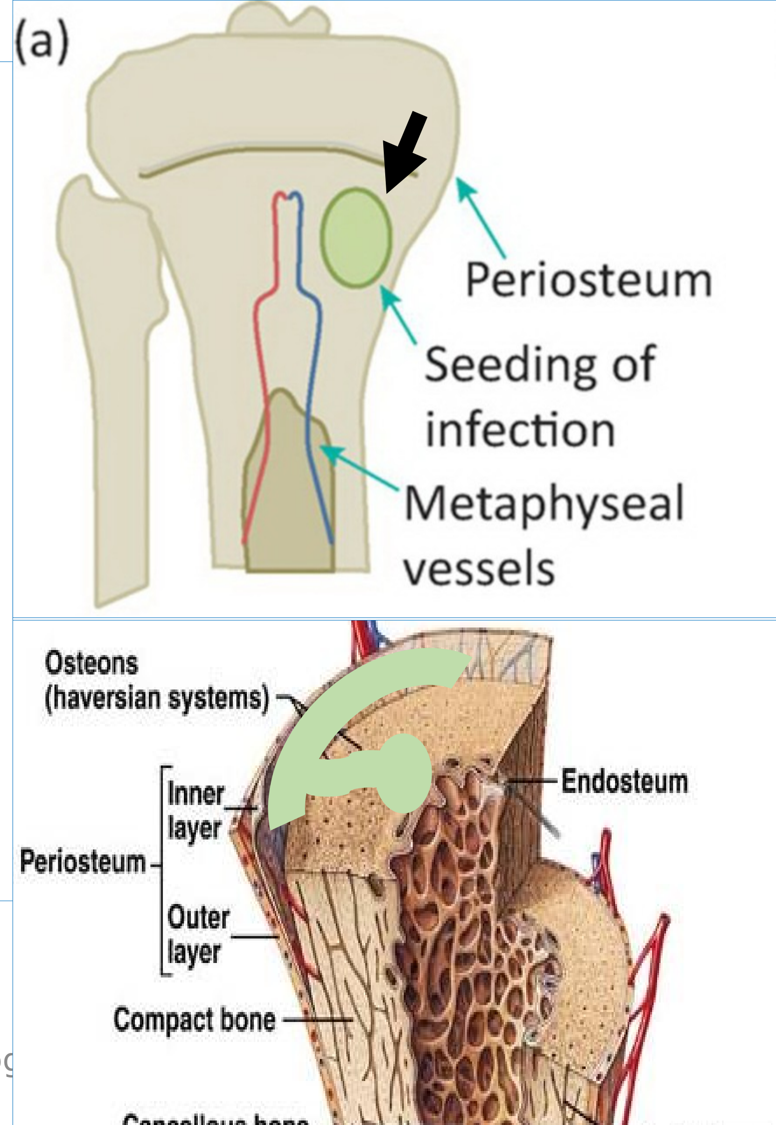
- The main hallmark is **fever** with localized **bony tenderness**
- In neonates **pseudoparalysis** and pain on **diaper change**



Pathogenesis of Acute Hematogenous Osteomyelitis

1. **The initial lesion is a <u>suppurative focus</u> in the <u>metaphysis</u>.**
2. **Spread** of infection occurs penetrates the **<u>endosteum</u>** -**---->** through the **<u>Haversian system</u> -->** collects **<u>under the periosteum</u>**

---> Subperiosteal abscess



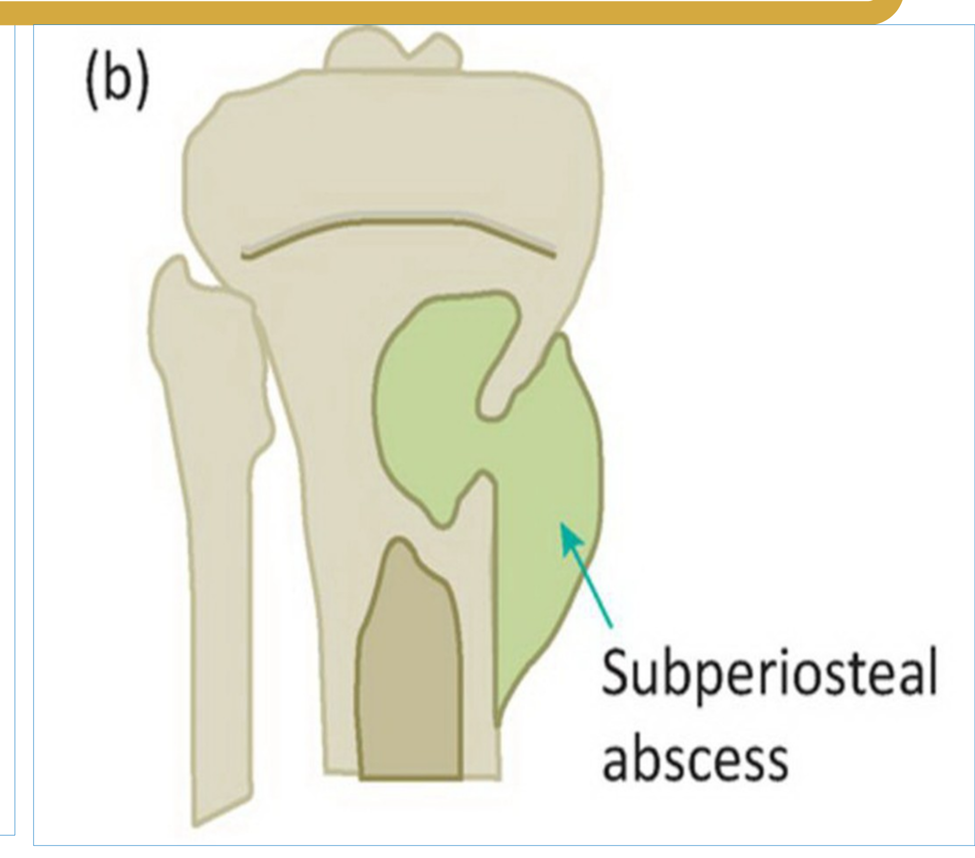
Acute Hematogenous Osteomyelitis



3. Bone necrosis due to:

A. Bacterial toxins.

B. Ischemia due to stretching, compression or thrombosis of periosteal vessels.

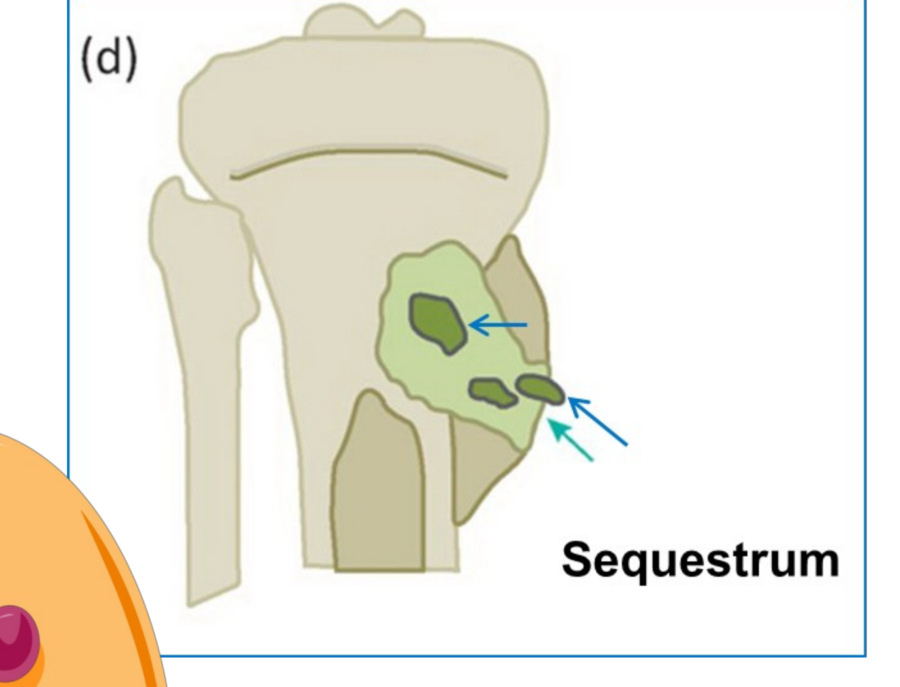


Acute Hematogenous Osteomyelitis



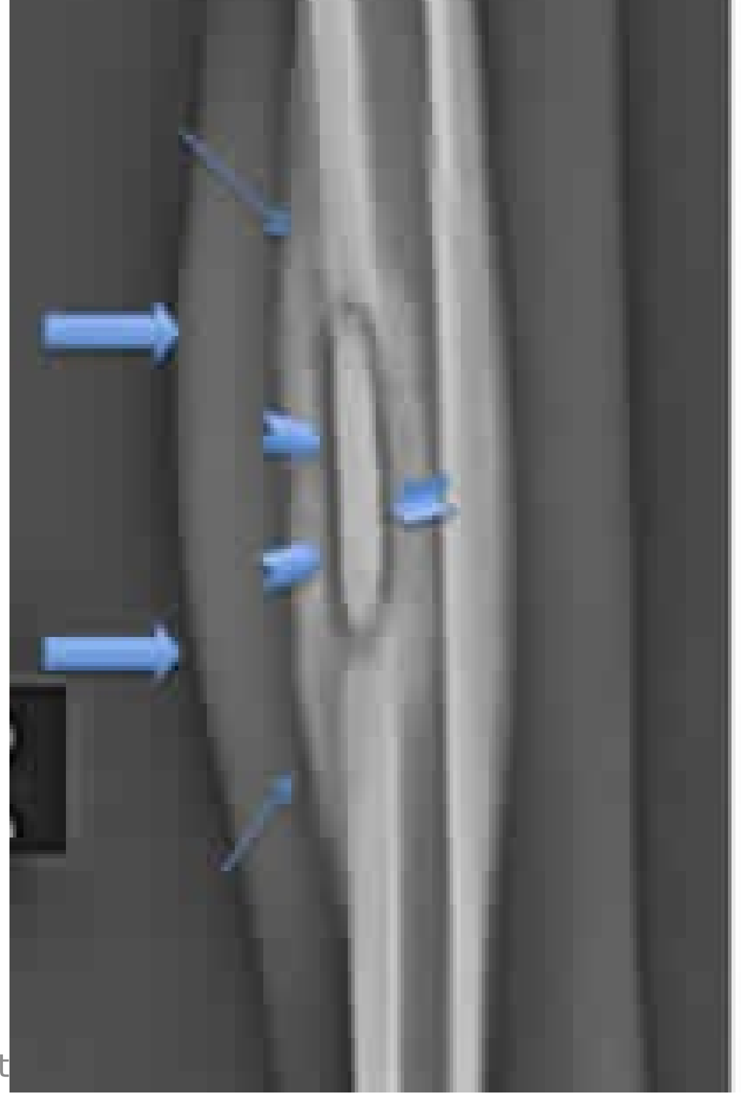
4. **<u>Separation</u>** of the necrotic bone by action of osteoclasts. This separated part
called

   <u>Sequestrum</u>



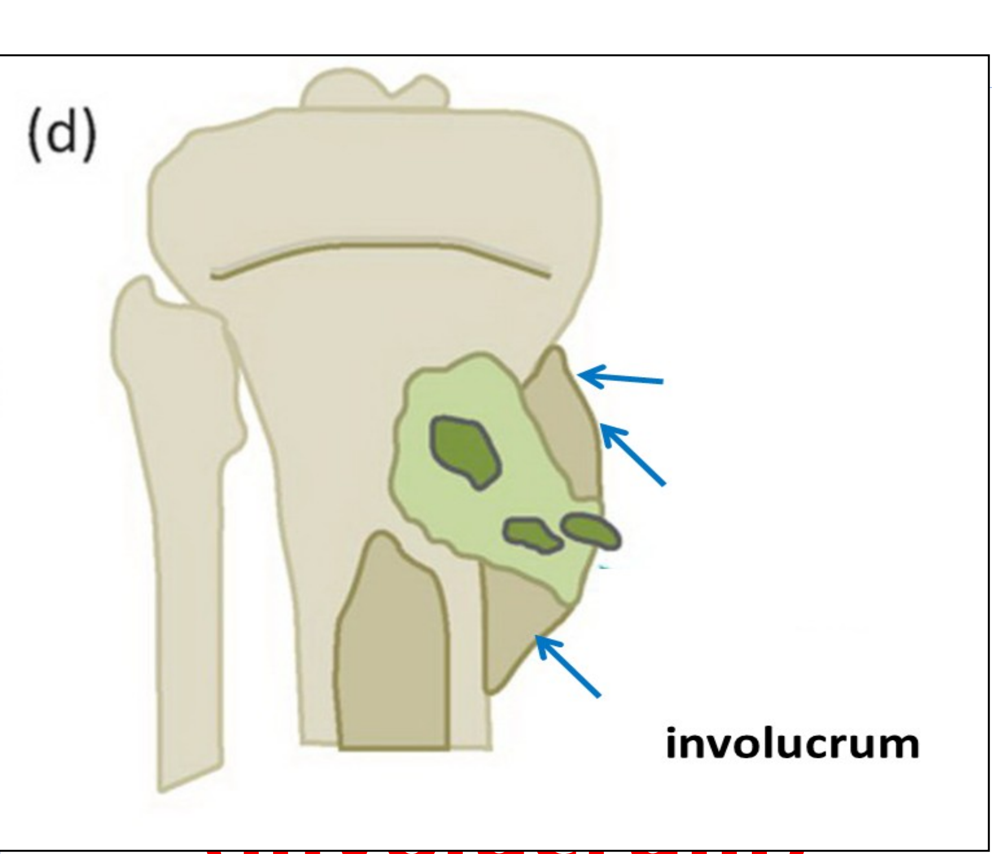
Acute Hematogenous Osteomyelitis





Acute Hematogenous Osteomyelitis





(involucrum)





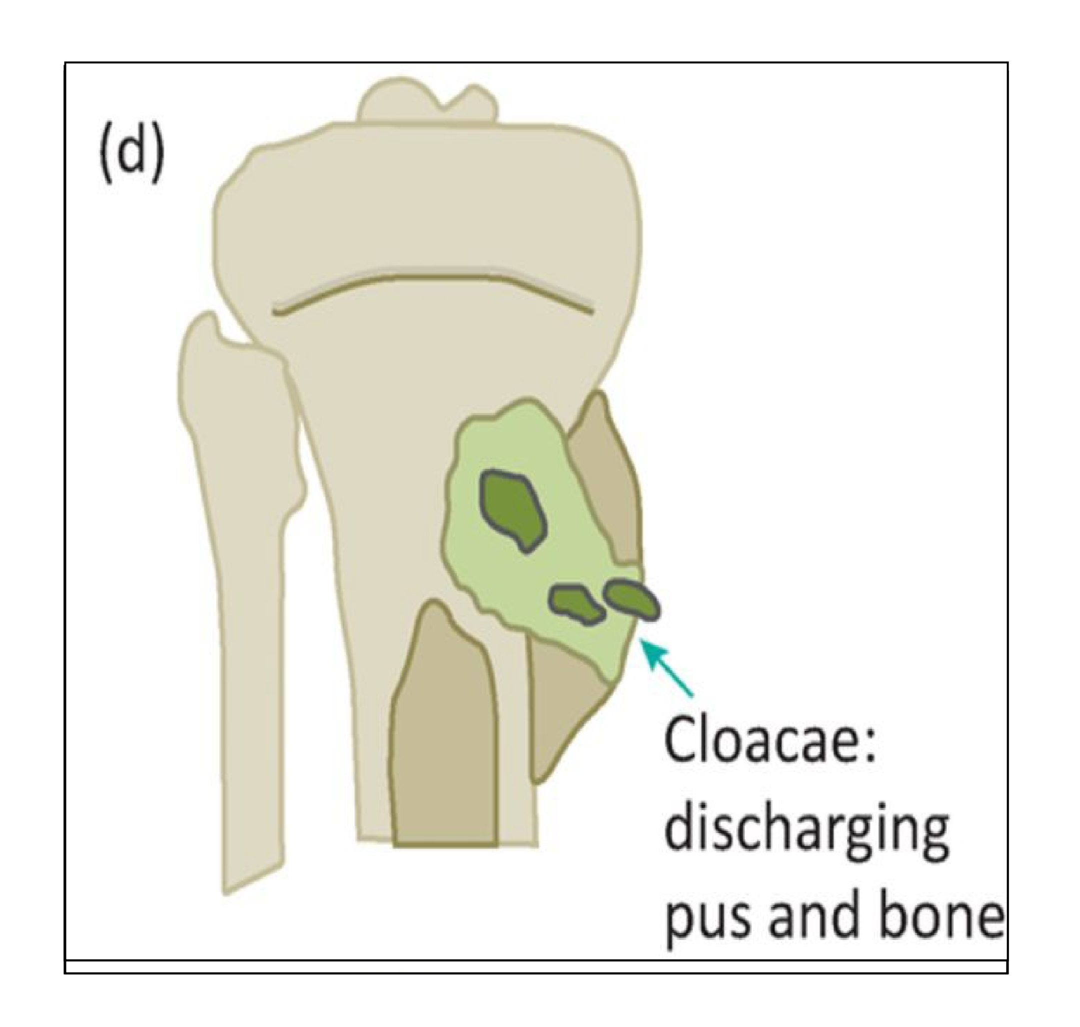
Acute Hematogenous Osteomyelitis



The sinuses now appear as thick-walled holes called **<u>cloacae</u>**.

This occurs in the chronic phase




(d)
Cloacae:
discharging
pus and bone

Acute Hematogenous Osteomyelitis



Complications:

1. Pathological fracture.
2. Direct spread of infection arthritis, myositis, neuritis..
3. Blood spread of infection toxaemia, septicaemia and pyaemia.
4. Chronic suppurative osteomyelitis.

   This may be further complicated by:

   a) Secondary amyloidosis.

   b) Epithelization of the sinuses which may later give rise to squamous cell carcinoma.

Acute Hematogenous Osteomyelitis





od vessels compres
aemia

Osteoclast effect



Sequestrum



Sinus formation



Involucrum

Lecture Quiz



In a 5 years old male patient with painful tender tibial swelling, a necrotic separated bony part is called:

1. **Involucrum**
2. **Sequestrum**
3. **Cloaca**
4. **Sinus**
5. **Abscess**

Which of the following is a cause of imperfect bone healing:

6. **Male gender**
7. **Young age**
8. **Hypertension**
9. **Corticosteroid therapy**
10. **Exercise**

SUGGESTED TEXTBOOKS



1. Robbins basic pathology, ninth Edition
2. Kaplan step 1 pathology lecture notes

   2017 (P.78-98)